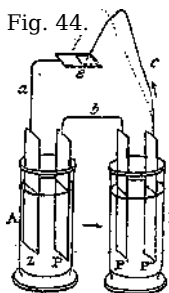


the intensity at which the current ceased to act would be the same for all bodies? and also whether the electrolytes thus resisting decomposition would conduct the electric current as a metal does, after they ceased to conduct as electrolytes, or would act as perfect insulators?

702. It was evident from the experiments described (639, 641) that different bodies were decomposed with very different facilities, and apparently that they required for their decomposition currents of different intensities, resisting some, but giving way to others. But it was needful, by very careful and express experiments, to determine whether a current could really pass through, and yet not decompose an electrolyte (645).

703. An arrangement (fig. 44) was made, in which two glass vessels contained the same dilute sulphuric acid, sp. gr. 1.25.

The plate *z* was amalgamated zinc, in connection, by a platina wire *a*, with the platina plate *e*; *b* was a platina wire connecting the two platina plates *P P'*; *c* was a platina wire connected with the platina plate *P''*. On the plate *e* was placed a piece of paper



moistened in solution of iodide of potassium: the wire *c* was so curved that its end could be made to rest at pleasure on this paper, and show, by the evolution of iodine there, whether a current was passing; or, being placed in the dotted position, it formed a direct communication with the platina plate *e*, and the electricity could pass without causing decomposition. The object was to produce a current by the action of the acid on the amalgamated zinc in the first vessel *A*; to pass it through the acid in the second vessel *B* by platina electrodes, that its power of decomposing water might, if existing, be observed; and to verify the existence of the current at pleasure, by decomposition at *e*, without involving the continual obstruction to the current which would arise from making the decomposition there constant. The experiment, being arranged, was examined and the existence of a current ascertained by the decomposition at *0*; the whole was then left with an end of the wire *c* resting on the plate *e*; so as to form a constant metallic communication there.

704. After several hours, the end of the wire *c* was replaced on the test paper at *e*: decomposition occurred, and the proof

of a passing current was therefore complete.
The current was